

# Step-by-step instructions: Steps 1-2 of 9

Seismic Design Web Serv

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Secure | <https://earthquake.usgs.gov/ws/designmaps/>

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## Seismic Design Web Service Documentation

Web services provided by the U.S. Geological Survey for computing seismic design parameters compatible with various building code reference documents.

This software is preliminary or provisional and is subject to revision. It is being provided to meet the need for timely best science. The software has not received final approval by the U.S. Geological Survey (USGS). No warranty, expressed or implied, is made by the USGS or the U.S. Government as to the functionality of the software and related material nor shall the fact of release constitute any such warranty. The software is provided on the condition that neither the USGS nor the U.S. Government shall be held liable for any damages resulting from the authorized or unauthorized use of the software.

### Reference Document End Points

ASCE7

- [2016 ASCE 7 Standard \(ASCE7-16\)](#)
- [2010 ASCE 7 Standard \(ASCE7-10\)](#)
- [2005 ASCE 7 Standard \(ASCE7-05\)](#)

ASCE41

- [2017 ASCE 41 Standard \(ASCE41-17\)](#)
- [2013 ASCE 41 Standard \(ASCE41-13\)](#)

NEHRP

- [2009 NEHRP Standard \(NEHRP-2009\)](#)
- [2015 NEHRP Standard \(NEHRP-2015\)](#)

IBC

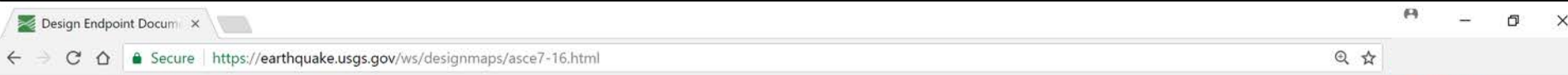
- [2012 IBC Standard \(IBC-2012\)](#)
- [2015 IBC Standard \(IBC-2015\)](#)

- Using a web browser such as Google Chrome or Mozilla Firefox, go to <https://earthquake.usgs.gov/ws/designmaps>
- Click on design document of interest, such as 2016 ASCE 7 Standard (ASCE 7-16)

**U.S. Geological Survey (USGS) Seismic Design Web Services**

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# Step-by-step instructions: Steps 3-4 of 9



## Example **3**

### Request

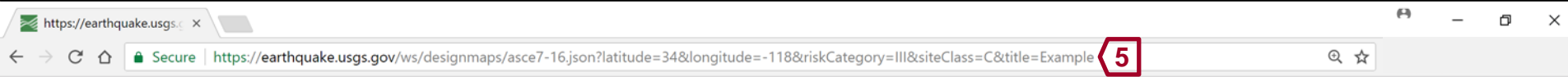
<https://earthquake.usgs.gov/ws/designmaps/asce7-16.json?latitude=34&longitude=-118&riskCategory=III&siteClass=C&title=Example> **4**

### Response

```
{
  "request": {
    "date": "2017-09-20T17:49:41.425Z",
    "referenceDocument": "ASCE7-16",
    "status": "success",
    "url": "http://localhost/ws/designmaps/asce7-16.json?latitude=34&longitude=-118&riskCategory=III&siteClass=C&title=Example",
    "parameters": {
      "latitude": 34,
      "longitude": -118,
      "riskCategory": "III",
      "siteClass": "C",
      "title": "Example"
    }
  }
}
```

3. Scroll down to Example  
4. Click on example request

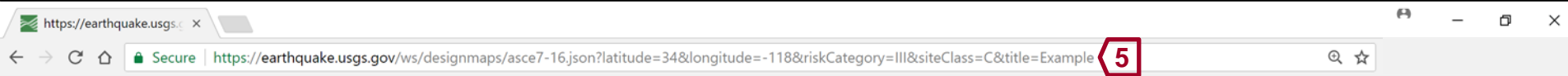
# Step-by-step instructions: Step 5a of 9



```
{
  "request": {
    "date": "2018-02-12T13:30:33.848Z",
    "referenceDocument": "ASCE7-16",
    "status": "success",
    "url": "https://earthquake.usgs.gov/ws/designmaps/asce7-16.json?
latitude=34&longitude=-118&riskCategory=III&siteClass=C&title=Example",
    "parameters": {
      "latitude": 34,
      "longitude": -118,
      "riskCategory": "III",
      "siteClass": "C",
      "title": "Example"
    }
  },
  "response": {
    "data": {
      "pgauh": 0.819,
      "pgad": 1.021,
      "pga": 0.819,
      "fpga": 1.2,
      "pgam": 0.983,
      "ssrt": 1.888,
      "crs": 0.896,
      "ssuh": 2.106,
```

5a. In address bar, change latitude and longitude to those of interest; for example, change 34 to 34.05 and -118 to -118.25

# Step-by-step instructions: Step 5b of 9

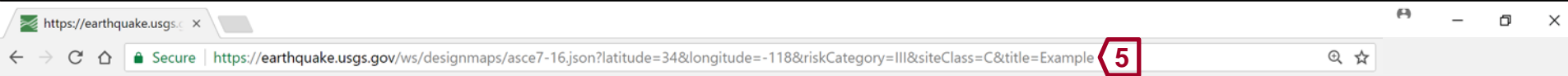


```
{
  "request": {
    "date": "2018-02-12T13:30:33.848Z",
    "referenceDocument": "ASCE7-16",
    "status": "success",
    "url": "https://earthquake.usgs.gov/ws/designmaps/asce7-16.json?latitude=34&longitude=-118&riskCategory=III&siteClass=C&title=Example",
    "parameters": {
      "latitude": 34,
      "longitude": -118,
      "riskCategory": "III",
      "siteClass": "C",
      "title": "Example"
    }
  },
  "response": {
    "data": {
      "pgauh": 0.819,
      "pgad": 1.021,
      "pga": 0.819,
      "fpga": 1.2,
      "pgam": 0.983,
      "ssrt": 1.888,
      "crs": 0.896,
      "ssuh": 2.106,

```

5b. Still in address bar, change risk category to that of interest (I, II, III, or IV); for example, change III to II

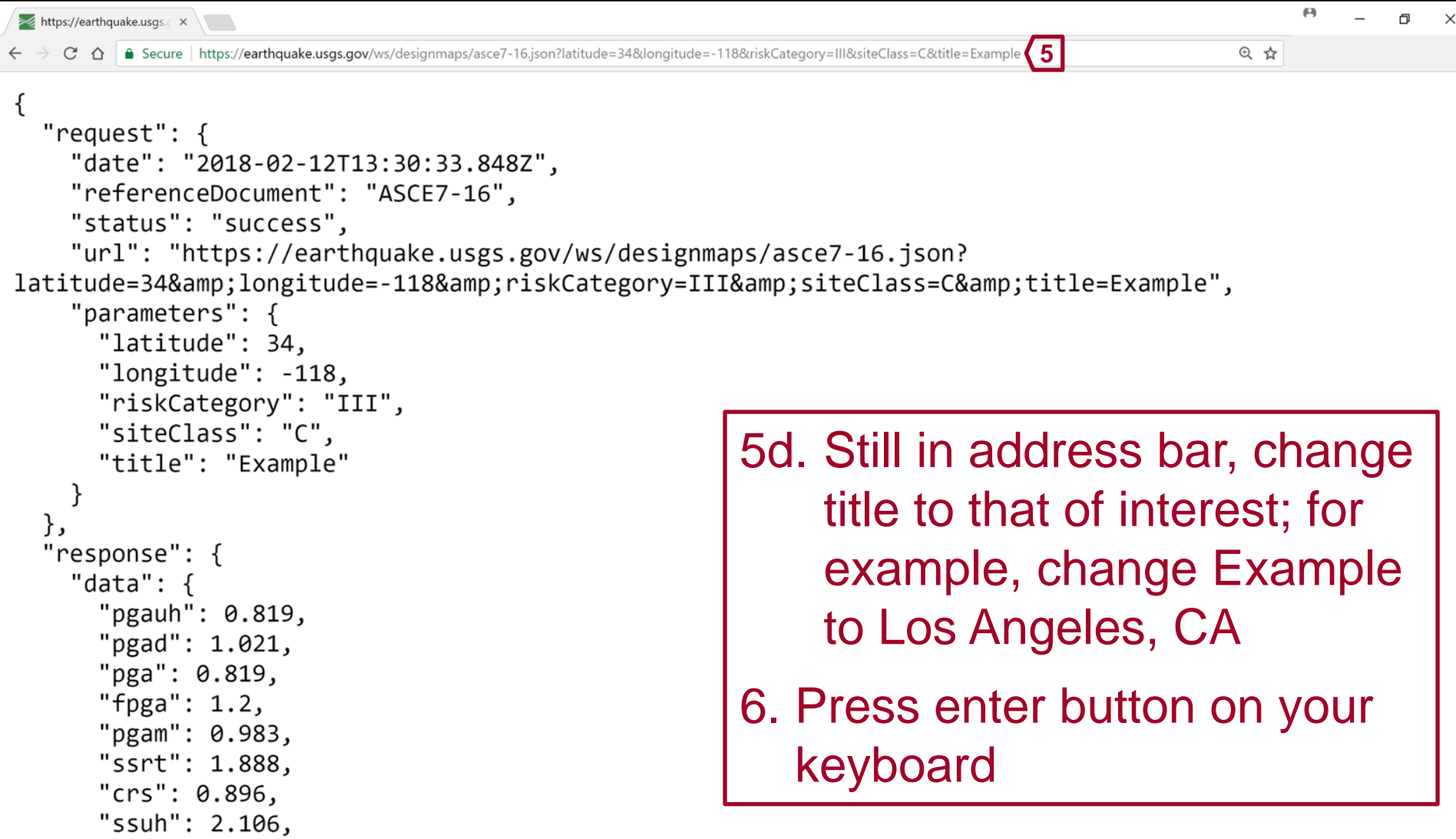
# Step-by-step instructions: Step 5c of 9



```
{
  "request": {
    "date": "2018-02-12T13:30:33.848Z",
    "referenceDocument": "ASCE7-16",
    "status": "success",
    "url": "https://earthquake.usgs.gov/ws/designmaps/asce7-16.json?latitude=34&longitude=-118&riskCategory=III&siteClass=C&title=Example",
    "parameters": {
      "latitude": 34,
      "longitude": -118,
      "riskCategory": "III",
      "siteClass": "C",
      "title": "Example"
    }
  },
  "response": {
    "data": {
      "pgauh": 0.819,
      "pgad": 1.021,
      "pga": 0.819,
      "fpga": 1.2,
      "pgam": 0.983,
      "ssrt": 1.888,
      "crs": 0.896,
      "ssuh": 2.106,
    }
  }
}
```

5c. Still in address bar, change site class to that of interest (A, B, B-estimated, C, D, D-default, or E); for example, change C to D-default

# Step-by-step instructions: Steps 5d-6 of 9



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```
{
  "request": {
    "date": "2018-02-12T13:30:33.848Z",
    "referenceDocument": "ASCE7-16",
    "status": "success",
    "url": "https://earthquake.usgs.gov/ws/designmaps/asce7-16.json?latitude=34&longitude=-118&riskCategory=III&siteClass=C&title=Example",
    "parameters": {
      "latitude": 34,
      "longitude": -118,
      "riskCategory": "III",
      "siteClass": "C",
      "title": "Example"
    }
  },
  "response": {
    "data": {
      "pgauh": 0.819,
      "pgad": 1.021,
      "pga": 0.819,
      "fpga": 1.2,
      "pgam": 0.983,
      "ssrt": 1.888,
      "crs": 0.896,
      "ssuh": 2.106,
    }
  }
}
```

5d. Still in address bar, change title to that of interest; for example, change Example to Los Angeles, CA

6. Press enter button on your keyboard

# Step-by-step instructions: Step 7 of 9

https://earthquake.usgs.gov/ws/designmaps/asce7-16.json?latitude=34.05&longitude=-118.25&riskCategory=II&siteClass=D-default&title=Los%20Angeles,%20CA

```
{
  "request": {
    "date": "2018-02-12T14:03:06.925Z",
    "referenceDocument": "ASCE7-16",
    "status": "success",
    "url": "https://earthquake.usgs.gov/ws/designmaps/asce7-16.json?latitude=34.05&longitude=-118.25&riskCategory=II&siteClass=D-default&title=Los%20Angeles,%20CA",
    "parameters": {
      "latitude": 34.05,
      "longitude": -118.25,
      "riskCategory": "II",
      "siteClass": "D-default",
      "title": "Los Angeles, CA"
    }
  },
  "response": {
    "data": {
      "pgauh": 0.844,
      "pgad": 0.998,
      "pga": 0.844,
      "fpga": 1.2,
      "pgam": 1.012,
      "ssrt": 1.97,
      "crs": 0.898,
    }
  }
}
```

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7. Check that requested parameter values are those you entered

# Step-by-step instructions: Steps 8-9 of 9

https://earthquake.usgs.gov/ws/designmaps/asce7-16.json?latitude=34.05&longitude=-118.25&riskCategory=II&siteClass=D-default&title=Los%20Angeles,%20CA

```
"response": {  
  "data": {  
    "pgauh": 0.844,  
    "pgad": 0.998,  
    "pga": 0.844,  
    "fpga": 1.2,  
    "pgam": 1.012,  
    "ssrt": 1.97,  
    "crs": 0.898,  
    "ssuh": 2.193,  
    "ssd": 2.467,  
    "ss": 1.97,  
    "fa": 1.2,  
    "sms": 2.364,  
    "sds": 1.576,  
    "sdcs": "D",  
    "s1rt": 0.701,  
    "cr1": 0.898,  
    "s1uh": 0.781,  
    "s1d": 0.786,  
    "s1": 0.701,  
    "fv": null,  
    "fv_note": "See Section 11.4.8",  
    "sm1": null,  
    "sd1": null,  
    "sdc1": null
```

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8. Scroll down to response data

9. Read  $S_S$ ,  $F_a$ ,  $S_{MS}$ ,  $S_{DS}$ , etc (see [documentation](#) for parameter definitions)